ENTOMOLOGICAL NEWS

VOL. XL. DECEMBER, 1929 No. 10

North American Institutions Featuring Lepidoptera.
IX. The Academy of Natural Sciences, Philadelphia, Pa.

By J. D. GUNDER, Pasadena, California.

(Plates XVII-XX).

Philadelphia is the birthplace not only of our national independence and constitutional law and liberty, but of a number of other good things. Among these, and not the least valuable, is an institution which has through its history, particularly before 1860, exerted a greater influence in the development of our knowledge of the natural sciences than any similar scientific body in America. I refer to the Academy of Natural Sciences of Philadelphia. It was founded in the fore part of 1812 by John Speakman, Jacob Gilliams and several others, including Thomas Say, the well-known naturalist and entomologist. The presence of Mr. Say and the high character of his early scientific work, coupled with the dignity he was able to lend the first proceedings, undoubtedly accounted for the continued existence of the Academy. Say was a born naturalist and scarcely troubled himself with "commercial business". At one time, as a result, it is said that he was so poor that he had to make his bed under a stuffed horse in the hall of the Academy. In his scientific investigations it is interesting to note he paid little attention to relationships and classification, but confined his work almost entirely to specific distinctions of which he had an unusually acute perception. His oral reports of original researches were the first to replace the time-honored reading of extracts from encyclopaedias and journals, which formed the usual attraction at those early-day meetings. The founders of the Academy in that distant period, nearly 118 years ago, did not have big buildings, tolerant

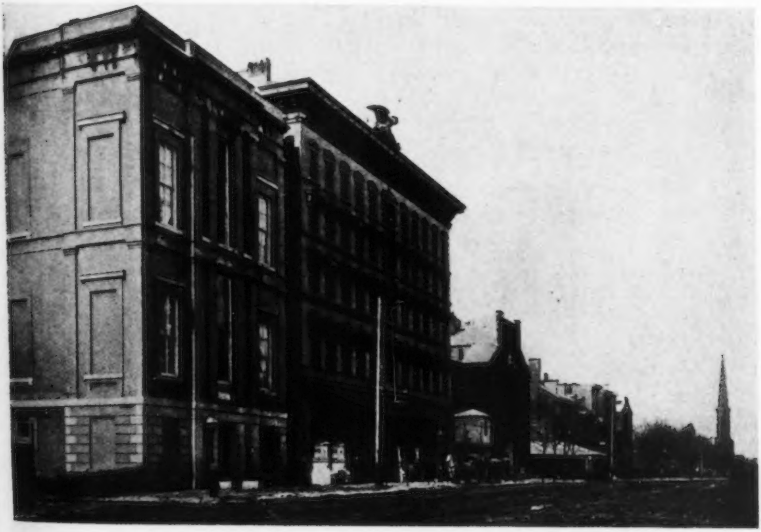
audiences or fine halls for their meetings. Little did they think when renting a small room on Second Street, and each gave a "small collection of scientific objects", that they were forming the nucleus of the museum and superb library which today gives the Academy its distinction among learned societies. The energy of those founders was persistent and the spirit of their industrious research has continued on down till now, as exemplified by the high character of the present scientific staff.

Philadelphia is also the birthplace of the first purely entomological society in America. On February 14, 1859, James Riding, George Newman and Ezra T. Cresson[1] met together at the Cresson residence with the view of forming an association "whose object shall be the advancement of entomological science, by ascertaining the name, locality and habits of insects found within the United States". This well-known organization thrived from the beginning and until 1867 was known as the Entomological Society of Philadelphia, when the name was changed to the American Entomological Society. The new name gave the body a national significance which it was eventually to merit. For a while, beginning in 1865, the Society edited a paper called *The Practical Entomologist*. It was in reality an economic journal intended for farmers, gardeners, foresters and agricultural people, but the venture was not appreciated by those for whom it was intended, as the times were not ripe and economic entomology was hardly understood, so the Society had to suspend this publication. However, to those Philadelphia entomologists and founders of the American Entomological Society goes the credit of being the pioneers of that immensely distributed work now being done by the Bureau of Entomology under the U. S. Department of Agriculture.

By 1876 the collection of insects, including types and library, of the Society had so increased that it was thought necessary to have them associated with the Academy of Natural Sciences, so admission was granted and an Entomological Section thereof was formed[2]. The Entomological Society has always retained

[1] His portrait appears on the front cover page of this volume of the NEWS.

ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA, 1826-1840



ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA, 1840-1876

THE
JOHN CRERAR
LIBRARY

its corporate existence, however. This move gave the collections fire-proof housing and the facilities which only a museum can afford. In looking over the records of the Society during the last 50 years, it is interesting to note the names of so many fine men and well-known scientists. As long as mankind shall be interested in the insect world, the memory of Cresson, Horn, LeConte, McCook, Skinner and others will remain bright.

In 1917 the Sections of the Academy were abolished and the Entomological Department of the Academy advanced, so that today it holds equal rank with the other divisions or sciences and occupies six large rooms on two floors, one above the other. All the collections, work tables and library are in close proximity. This is a very advantageous arrangement because in some museums, most museums in fact, the library is "down stairs" or far away and much "red tape" is necessary to get a book and return same within a specified time.

The collections of butterflies and moths are kept in 120 metal and wooden cabinets which contain altogether about 1400 drawers of Lepidoptera. These cases are not double-decked as there is plenty of floor space. Mr. Williams estimates there are 500 types and some 150,000 mounted specimens in all, but I think these figures must be rather low. The Museum of the Academy displays a fine localized collection of Insects for the average individual, which saves wear and tear on the main collections. It provides a cohesive visualization of the butterfly and moth fauna around Philadelphia. Dr. J. B. Clemens has recently given the Academy a memorial cabinet to hold the microlepidoptera collections and writings of his father and others. It is known as the "Brackenridge Clemens Memorial" and is shown in the background of plate

[2] See illustrations of Academy Building up to 1840 and up to 1876 on Plate XVIII. The present Academy Building, shown in circle at top of Plate XVII, consists of six large three-story buildings of brick and terra-cotta, connected into an E-shaped group. They cover approximately one acre of ground area. Unfortunately the Academy receives no support from the City of Philadelphia, but in the past the State of Pennsylvania has financed the erection of some of its buildings. Although no definite expansion plan is contemplated at present, it will undoubtedly be necessary within the next few years.

XVII. Among the larger individual collections of lepidoptera which have come to the Institution in the past are those of Felipe Poey, 1865; B. Clemens, 1867; T. R. Peale, 1890; I. C. Martindale, 1894; C. A. Blake, 1903, and Henry Skinner, 1908.

Mr. R. C. Williams, Jr., has recently donated his excellent collection of about 25,000 butterflies, which include his American Hesperioidea and Palaearctic Rhopalocera. Mr. Williams was born in Brooklyn, New York, August 21, 1869, attended the Adelphi Academy, of Brooklyn, N. Y., in 1889 and was graduated from Cornell with B.S. and M.E. in 1892. He has been Research Associate on the staff for years and since the demise of Dr. Henry Skinner, has been considered their expert on American butterflies, especially the skippers. Numerous contributions on Hesperiids have appeared from his pen in recent years and before that, several upon the larger Hesperiidae of North America in joint authorship with Dr. Skinner. His investigations have had as a background the genitalic morphology of the species and having about worked-out the North American fauna, he is now engaged on the neotropical groups. Mr. Williams has made many trips abroad and also to the western and southern United States. While these trips have not always been basically entomological field expeditions, he has secured valuable and important material and is continually increasing the collections of his specialty at the Academy. He at present holds the office of President of the American Entomological Society.

To. Mr. J. W. Coxey is evidently left the task of building up the Academy's collection of exotic lepidoptera. He has already made two very successful trips to Ecuador (1926-27 and 1928-29), bringing home valuable and extensive collections, including many rarities which only a personal trip can secure. He was unfortunately absent in South America when the Academy group photograph was taken, but Plate XIX of this article shows him busy at the time in camp at Dos Puentes, Ecuador, mounting what is evidently a large specimen of a

PREPARING TROPICAL BUTTERFLIES FOR SHIPMENT

[Photograph of Mr. W. Judson Coxey at camp in Dos Puentes, Ecuador; February, 1929]

MAP OUTLINING THE EXPEDITIONS OF THE MUSEUM

DURING THE YEARS 1927 AND 1928

1—ALASKA: Expedition to Kodiak Island. HARRY WHITNEY secured four specimens Alaskan Brown Bear. Motion picture films obtained.

2—BRITISH COLUMBIA: CLEMENT B. NEWBOLD collected specimens Rocky Mountain Goats and Mountain Sheep. These are now being prepared for exhibition in Museum.

3—UTAH, IDAHO, OREGON, NEVADA: Field work—Entomology.

4—UTAH: Waterfowl and other birds collected. Motion picture films obtained.

5—LOUISIANA: Waterfowl collected. Motion picture films obtained.

6—WEST VIRGINIA, NORTH CAROLINA, KENTUCKY: Field work—Botany.

7—NORTH CAROLINA (EASTERN): Field work—Birds.

8—COSTA RICA: Field work—Entomology and Birds.

9—CUBA: Field work—Conchology.

10—DOMINICAN REPUBLIC: Valuable collection birds secured by JOHN T. EMLEN, JR.

11—WEST INDIES: Birds collected by JAMES BOND.

12—ECUADOR, PERU, BOLIVIA: Field work—Entomology. By W. JOHNSON COSBY.

13—SIAM: Bird collection secured by RODOLPHE MEYER DESCHAUENSEE.

14—CHINA, YANGTSE DELTA: Birds collected under direction of LACEY I. MOFFETT.

15—CHINA, SHANTUNG PROVINCE: Collection of birds obtained by RUFUS H. LEFEVRE.

Morpho butterfly. Mr. Coxey was born in Camden, New Jersey, November 29, 1887, and is a valued Research Associate on the staff. Would that he could be induced to give us several vivid articles in the NEWS upon his collecting experiences in the wilds of Ecuador!

The Frank Haimbach collection of Heterocera (moths), which he donated to the Academy not long ago, is especially noteworthy. For forty years Mr. Haimbach has been an assiduous collector of these insects in the middle Atlantic States and in this way and by exchange, he has built up a most extensive and beautifully prepared series of many thousands of specimens. He occasionally publishes records and new descriptions of moths in the NEWS and *Transactions*. Mr. Haimbach was born July 2, 1859, and is a native son of Philadelphia. He is Secretary and Treasurer of the American Entomological Society and former corresponding Secretary of the same society.

Aside from Lepidoptera there are several men working on other insect orders who have helped make the Entomological Department of the Institution internationally well known. Mr. E. T. Cresson, Jr., for example, whose interest is the Diptera, is clearly the foremost American authority on the Acalyptrate family Ephydridae. Over a period of nearly twenty years he has published a considerable number of articles and a fair portion of these papers are parts of a revision of this family, on which he has been engaged for nearly his entire productive period.

Mr. Morgan Hebard, Curator, and Mr. James A. G. Rehn, Secretary of the Academy and Associate Curator of the Department of Entomology, are both specialists in the Orthoptera and have made numerous field trips together to western and southern United States. Special trips were often made to the desert portions of Nevada, Utah, Arizona and New Mexico. Their Orthoptera collections are unsurpassed and both are continually offering new papers upon every phase of this interesting order.

The American Entomological Society issues three publications, namely: the *Transactions,* a quarterly started in 1867, following the *Proceedings of the Entomological Society of Philadelphia;* the *Memoirs,* which are complete papers of monographic character appearing at irregular intervals since 1916, and this publication, ENTOMOLOGICAL NEWS, which was begun in 1890. An outstanding feature of the NEWS, which has always been distinctive, is its section devoted to "Entomological Literature". Mr. E. T. Cresson, Jr., deserves a great deal of credit for his invaluable work of continually abstracting those many tedious references.

Dr. P. P. Calvert is sufficiently well known to our readers as the Editor of the NEWS and writer on Odonata. His collection of these insects is at the Academy.

Mr. James A. G. Rehn has materially assisted me in the preparation of this article and I heartily thank him for much of the data contained herein.

A State Butterfly for California (Lepid.: Pieridae).

The entomologists of the State of California, numbering about 200 as a whole, recently voted upon the question of a State Insect and choose the native butterfly, *Zerene eurydice Bdv.*, (the Dog Head or Flying Pansy), to serve as their emblem.

The State Flower for California is the "Poppy". This is the first state in the Union to record a symbol of the Insect Kingdom for acceptance by the general public. It will undoubtedly stimulate interest in entomology. Will not other states, Pennsylvania, for example, follow suit? The accompanying insignia illustrate the male of the species. See the October, 1929, *Pan-Pacific Entomologist* for further information.

J. D. GUNDER, Pasadena, California.

The North American Species of Sarcophaga belonging to the "A" Group[1] (Dip.: Sarcophagidae).

By DAVID G. HALL, JR.,
Kansas State Agricultural College.

Four species of Sarcophaga were included by Doctor Aldrich (1916, Sarcophaga and Allies. p. 67) in his provisional "A" Group. These were *S. sinuata* Mg., *S. cockerellae* Ald., *S. hineii* Ald., and *S. pulla* Ald. To these may be added *S. morosa* Ald. (1925. Proc. U. S. Nat. Mus. Vol. 66:26), and the two species herein described.

These species have the following characters in common: Three postsutural dorso-central bristles, genital segments black, and the hind tibiae of the male more or less villous.

Acknowledgment for the comparison of specimens with type material, and for the generous exchange of notes is due Dr. J. M. Aldrich, of the United States National Museum.

Key to Species.

1. Outer verticals well developed, first posterior cell closed or but slightly open in margin. (D. C., Va., Penna.) *minutissima* n. sp. Fig. 1
   Outer verticals absent 2
2. Two sternopleural bristles present (Alta. Can.) *canadensis* n. sp. Fig. 2
   Three sternopleural bristles present 3
3. Middle femora with whitish, yellowish, or golden patch of hair on outer front side (widespread—Northern U. S.) *sinuata Mg.*
   Middle femora plain, without such spot 4
4. Second abdominal segment with pair of median marginal bristles which may be somewhat small or depressed 5
   Second abdominal segment without median marginal bristles 6
5. Middle tibae with three antero-dorsal bristles, forceps thick with a long, slender tooth on tip (Colo., N. Mex., and British Col., Can.) .....*cockerellae* Ald.
   Middle tibae with one large and one small antero-dorsal bristles, forceps slender with a small tooth on middle of the blunt tip (Lake Erie area) .....*hineii* Ald.
6. Accessory plate long and finger-like (Ohio, Penna.) *pulla*, Ald.
   Accessory plate triangular (Ontario, Ohio) ..*morosa* Ald.

[1] Contribution No. 374 from the Entomological Laboratory, Kansas State Agricultural College.

Sarcophaga minutissima n. sp. (Fig. 1).

Small; black; outer verticals developed.

♂. Front narrow, .161 of head (average of three .190, .160, and .133); parafrontals and parafacials silvery, the latter with the usual row of minute hairs below near eye, the lower two long and bristle-like; frontal bristles about eight, the lower few diverging to the middle of the second antennal joint; antennae black, third joint hardly twice second, reaching four-fifths

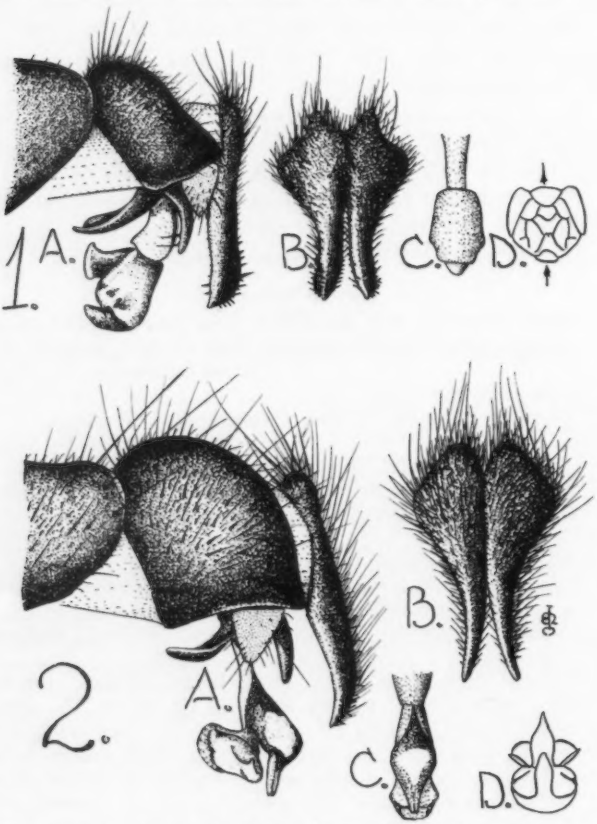


Fig. 1.—*Sarcophaga minutissima* Hall. Fig. 2.—*Sarcophaga canadensis* Hall. A. Left lateral view of hypopygial composite. B. Rear view of forceps. C. Rear view of penis. D. Tip of penis.

distance to the vibrissae which are normal and are at the oral margin; arista plumose for half its length; palpi and proboscis black, normal; bucca two-thirds eyeheight; back of head with two rows of post-ocular bristles, below with some pale hairs, none before the metacephalic suture; outer verticals distinct.

Thorax with the usual 3-5 black stripes; anterior acrostichals 2; prescutellars present, small and slender; postsuturals 3; sterno-pleurals 3, the intermediate rather small and hairlike; scutellum with two marginals, one subapical and one apical.

Abdomen thinly pollinose, the usual tessellation indistinct; second and third segments with median marginals; fourth with marginal row of about twelve; fifth sternite obscured.

Hypopygium shining black; first segment small, a few hairs in a posterior marginal row; second segment globose, shining black, clothed with numerous black hairs; forceps black, in rear view, behind diverging gently to tips, clothed with long curly hair, anterior edge straight with slight tip, posteriorly curved strongly forward at tip, behind at tip with a patch of minute spines; accessory plate triangular, more brown than black; posterior clasper black, curved slightly forward with several hairs on the anterior edge; anterior clasper black, curved strongly forward, the inner edge rolled toward outside; penis composed of two segments, first segment transparent white and curved somewhat forward, second segment with rounded anteriorly thick tip, forward, on each side two partially transparent plates or processes extending anteriorly, centrally one each side with a semi-transparent pad.

Wings anteriorly smoked brown; costal spine present; third costal segment shorter than fifth; first posterior cell closed or slightly open in the wing margin; first vein bare; third with several setulae.

Legs, black; middle tibae with two antero-dorsal bristles; hind tibae with sparse villosity.

♀. Front narrow, .254 of head (average of three .250, .231, .291); generally less pollinose than male; lacks the scutellar apicals; otherwise like male except for sexual characteristics. Length 3½-5 mm.

Three males and three females from the U. S. National Museum collection: two females, Rock Creek Park, DISTRICT OF COLUMBIA, August 19, 1927, C. H. T. Townsend; one male and one female, Falls Church, VIRGINIA, Aug. 27, 1912, C. T. Greene; one male, Rock Creek Park, D. C., May 1, 1919, G. E. Quinter; one female, Montebello, PENNSYLVANIA, Oct. 5, 1920, Champlain and Knull. *Holotype*, the Rock Creek Park

male in the U. S. N. M., No. 41910. *Allotype*—Female from the same locality in the U. S. N. M., No. 41911.

To the knowledge of the author, this is the smallest species of Sarcophaga to be described from North America. Notwithstanding the closing of the first posterior cell in the margin of the wing, chaetotaxy and genital similarities adhere it to the present grouping.

Sarcophaga canadensis n. sp. (Fig. 2).

Small; tessellated; two sternopleurals.

♂. Front .333 of head in single specimen; frontal stripe narrow; frontal bristles about eight, the lower few diverging to the middle of the second antennal joint; parafacials and parafrontals silvery, the latter with the usual row of minute hair below near eye; antennae black, third joint two-thirds length of second, reaching three-fourths the distance to the vibrissae which are normal and are at the oral margin; arista plumose for half its length; bucca reddish and but slightly pollinose, one-third the eyeheight; palpi and proboscis black, ordinary; back of head with one complete and seveeral scattered rows of black hair; outer vertical not differentiated; a few pale hairs around neck and below, none before the metacephalic suture.

Thorax with usual 3-5 black stripes, quite shining; anterior acrostichals 0; postsutural dorsocentrals 3; sternopleurals 2; scutellum with two marginals, no preapicals nor apicals.

Abdomen thinly pollinose, mostly shining black; first and second segments with lateral bristles only; third with median marginal pair, fourth with marginal row of about twelve; fifth sternite obscured.

Hypopygium black; first segment with a row of hair-like bristles on posterior margin; second segment quite hairy, shining black; forceps in rear gradually diverging to tips, with long curly hair at base; in profile gradually curving forward to sharp point; accessory plate triangular, more brown than black; posterior clasper black, slightly curved anteriorly; anterior clasper black, curved strongly anteriorly, its outside edge rolled inward; penis narrow at base, globose toward tip where two tube-like processes project downward, anteriorly with shoe-shaped protuberance which is white and semi-transparent.

Legs black; middle femora with anterior and posterior combs; middle tibae with one antero-dorsal bristle; hind tibae with villosity.

Wings sub-hyaline; no costal spine; third costal segment longer than fifth; first vein bare; third with several setulae.

Female unknown.

One male, Banff, ALBERTA, Canada, June 15, 1922, collected by C. B. D. Garrett and sent to the author by Mr. C. H. Curran from the Canadian Entomological Collections at Ottawa, Ont. *Holotype.*—In the Canadian Entomological Collections.

Three sternopleural bristles are found quite constantly in all the species of Sarcophaga. The presence of but two in *S. canadensis* should render the species easily recognizable in both the male and the female.

Although the genitalia of the male are quite unlike the other species within this group, and the species has but two sternopleural bristles, it should not be of generic or of sub-generic importance. *S. bisetosa* Parker has only two sternopleural bristles, but the genitalia of the species are almost identical to that of *S. cimbicis* Townsend, showing that the absence of one sternopleural bristle is not of generic significance.

SARCOPHAGA SINUATA Meig.

Meigen, 1828, Syst. Bescher., V: 22—Europe.
Townsend, 1892, Trans. Am. Ent. Soc., XIX: 110-111.
Sarcotachinella intermedia.—Ill.

This is the most easily determined Sarcophagid occurring in North America. Both the male and the female have the outer front side of the middle femora with a brilliant whitish, yellowish, or golden spot.

S. sinuata is evidently a common species in this country. Specimens have been determined from New England to Oregon, and southward to northwestern Arkansas, apparently most common in the St. Lawrence River area. Bottcher stated that the species was widely distributed in Europe, but that it was apparently nowhere common.

SARCOPHAGA COCKERELLAE Ald.

Aldrich. 1916, Sarc. and Allies, p. 70, fig. 22.

The species is evidently not common. Beside the type specimens, one male has been seen from White Lake, BRITISH COLUMBIA, Canada, July 27, 1929, collected by Norman Criddle. *Holotype.*—Male No. 20495, U. S. N. M.

SARCOPHAGA HINEII Ald.

Aldrich, 1916, Sarc. and Allies, p. 71, fig. 23.

Auten, 1925, Ann. Ent. Soc. Am. XVIII: 244. (Reared from nests of spiders, *Philodromus canadensis, Epeira sclopetaria* and *Aranea frondosa*).

The characters given in the key, separate this species from its closest ally, *S. cockerellae* Ald.

The species was first collected by Prof. J. S. Hine, at Cedar Point, OHIO, where it is commonly found during the summer. Dr. C. H. Kennedy of Ohio State University has collected for a number of years at Put-in-Bay, Ohio, and has found the species common on the islands. The author appreciates the donation of over one hundred males and females of this species which he collected there.

It is commonly reared from the nests of certain house-inhabiting spiders in the Lake Erie area, Miss Agnes Auten being the first to rear material extensively. Her report is noted above.

Holotype.—Male No. 20496, U. S. N. M.

SARCOPHAGA PULLA Ald.

Aldrich, 1916, Sarc. and Allied, p. 72, fig. 24.

Aside from genital peculiarities of the male, this species may be separated from all the species very closely related, with the exception of S. morosa, Ald., by the lack of median marginals on the second abdominal segment. From S. morosa, the species is most clearly separated by the shape of the accessory plate which is triangular in *S. morosa*, elongate and finger-like in *S. pulla*.

The type specimen of this species was collected in Westmoreland County, PENNSYLVANIA. Specimens have been collected at Cantwell Cliffs, OHIO, May 15, 1926, by the author.

Type. Male, Acc. 321, Carnegie Museum, Pittsburgh, Pa.

SARCOPHAGA MOROSA Ald.

Aldrich, 1925, Proc. U. S. Nat. Mus., Vol. LXVI, 26, fig. 1, d.

The type specimen of S. morosa was reared from a larva by F. Johansen, near OTTAWA, Canada, the fly emerging July 11, 1918. Specimens have been taken by the author at Miami County, OHIO, June 14, 1928, and Lucas County, Ohio, June 19, 1928. *Holotype.*—Male No. 27098, U. S. N. M.

Notes on the Relationship between Formica ulkei Emery and Solenopsis molesta Say (Hymen.: Formicidae).*

By THOMAS PARK, University of Chicago.

The general economy and life-history of *Solenopsis molesta* has been well studied by a number of investigators, among whom McColloch and Hayes (1916) have presented complete and significant data on this subject. This ant which often inhabits the nests of larger species is known as a "thief-ant" or as Wheeler classifies it, a "Lestiobiosis" type, (1910; p. 427) and is found living typically in such a relationship with many forms. In an examination of the *Formica ulkei* mound-nests at Palos Park, Illinois, a number of colonies of *Solenopsis molesta* were found existing in greater numbers in the outer layers of the nest similar to the other cases described by McColloch and Hayes. The nests of *Solenopsis* consisted of a net-work of minute tunnels which branched off from a well used passageway of the *Formica* nest and radiated from a comparatively large cavern located between the Formica runways. These small tunnels were too tenuous to allow a *Formica ulkei* worker to enter them, and they seemed, furthermore, to be continually guarded. When both species were introduced into the laboratory, the *Solenopsis* colony seemed to thrive and to have no real need of the larger ant.

In the laboratory, *Solenopsis molesta* defends itself and its nest from *F. ulkei* with great vigor, displaying the same reaction each time attacked. *Molesta* workers would mount upon the femora and antennae of the larger ant so that in all the invader had about six or eight individuals upon its appendages. There they would cling biting and perhaps stinging until the death of the *Formica ulkei*. The latter seemed powerless to remove these pests and after varying length of time died, whereupon all of the *Solenopsis* workers dismounted from the dead ant and returned to their nest. The details of this process seemed to be essentially the same in all of the six or seven cases observed. In one instance, after a *Formica* had been so

*Supervised by Dr. W. C. Allee.

attacked, it was immediately killed and soon after the reflexes of death had ceased the *Solenopsis molesta* workers left the body and paid it no more attention.

The main object of this note, however, is to record the occurrence of *Solenopsis molesta* in *Formica ulkei* nests in a "Lestiobiotic" relationship; a fact hitherto overlooked.

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MCCOLLOCH, J. W. & HAYES, W. P. 1916. A Preliminary Report on the Life Economy of *Solenopsis molesta* Say. Journal of Economic Entomology, Vol. IX.

WHEELER, W. M. 1910. Ants. Their Structure, Behavior, and Development. New York: The Columbia University Press.

Hesperia ruricola Boisd. and Pamphila californica Mabille Synonyms of Atrytone vestris (Boisduval) (Lepid.: Hesperiidae).

By W. J. HOLLAND, Carnegie Museum, Pittsburgh, Pennsylvania.

In the *Annales* of the Entomological Society of France (2) X, 1852, p. 315, Boisduval briefly described *Hesperia ruricola*. In the "Lépidoptères de la Californie," (Ann. Soc. Ent. de Belgique, XII, 1863, p. 25) he republished his description of the species. He gives California as the habitat of the insect. Both descriptions are quite brief and amount to the statement that the butterfly is in form and size like *lineola*, fulvous in color above, with a narrow brown border, the sexual brand of the primaries as strongly developed as in *sylvanus*, bordered longitudinally by a fine light line. The underside yellowish, with the entire surface of the inferiors and the apex of the superiors greenish (verdâtre).

Speaking of this insect in the *Études Comparées*, Fasc. IX, 1re Partie, 1913, p. 43, Mons. Charles Oberthür remarks: "Manque dans la collection; le type parait perdu."

The identity of the insect has been a puzzle to American (and particularly Californian) lepidopterists.

Last March I wrote to Mons. Réné Oberthür at Rennes, in whose hands are now all the *Hesperiidæ*, which were a part of the collection of his brother Charles, requesting him to kindly make a renewed search for the type of *H. ruricola*, and to give me all the information possible. I have just received from him a long and most interesting letter, which is well worthy of being translated and published at length; but I content myself in this connection with a condensed statement. With the most obliging generosity he has risked sending me across the ocean one of the three males possessed by him, and mentioned by me in what follows. I have carefully studied this specimen in company with Prof. A. W. Lindsey, who agrees with me in my conclusions.

Mons. Réné Oberthür after careful search found a specimen bearing the printed locality-label "Californie, Lorquin", and labelled in Boisduval's handwriting *"Hesperia rubicola.* Type." As Boisduval never published a species under the name *"rubicola,"* from California, but did publish the name *"ruricola"* as that of a Californian species, Mons. Oberthür naturally has reached the conclusion that Boisduval, who published the species under the name *"ruricola,"* had intentionally, or inadvertently, changed the name from what is written on the label. The change, which involves but one letter (the substitution of "r" for "b"), may represent a *lapsus calami*, when Boisduval was penning his description, which went to the printer; or he may have thought *"ruricola"* more appropriate, and have failed to make the corresponding change on his label. Mons. Oberthür informs me that he has two other specimens of the same provenance, each bearing the same printed label "Californie. Lorquin." All three, including the type of *ruricola* (*rubicola*), came into the hands of their original possessors through Depuiset, a well known dealer in insects, to whom Lorquin sent his collections made in California to be sold. The second specimen, a male, identical with the type of *ruricola*, is the type of *Pamphila californica* Mabille, obtained by Réné Oberthür from Mabille himself, who described the insect under the foregoing name in the *Comptes-Rendus* of the Soc. Ent. de Belgique, T. XXVII, 1883, p. lxvii. Mons. Oberthür informs me that this insect exactly matches in every par-

ticular the type of *H. ruricola* (*rubicola*). The third specimen in the hands of Mons. Oberthür was originally in the possession of Guenée, whose insects became the property of Mons. Charles Oberthür. It too bears the printed label "Californie. Lorquin." Mons. Oberthür tells me that is an exact match of the other two specimens of which I have spoken above. This specimen Mons. Oberthür has kindly sent me for study and examination.

Careful and protracted examination shows that this third specimen is positively and beyond doubt an old (it lacks the antennæ) example of *Atrytone vestris* (Boisd.) matching specimens from Shasta and other parts of California in the Edwards, Holland, and Lindsey Collections, which are somewhat paler as a rule than specimens from the eastern part of the continent. As Dr. Lindsey put the matter to me when we were examining the insect: "Put a male of *A. vestris* in the sun, bleaching it for a week, and the type of *Hesperia ruricola* or of *Pamphila californica* will be before you."

This discovery eliminates from future Check-lists of the Hesperiidæ of North America, two specific names, which have long been used as those of species *"incertæ sedis,"* and puts them into the already formidable list of synonyms of *A. vestris*.

An Unexpected Food Plant of the Striped Cucumber Beetle (Coleop.: Chrysomelidae).

W. V. Balduf's paper on the striped cucumber beetle in the October number of the NEWS, reminds me of an observation on this insect which seems worthy of record. On June 1st, 1928, having need of living adults of *Diabrotica vittata* for exhibition purposes on Long Island, N. Y., I searched carefully for specimens in the vicinity of old cucumber fields but without success. The new plantings were not yet above ground and I was forced to give up the search. On the way back to the hotel in Riverhead, however, I stopped to examine a beautiful stand of the pink lady-slipper (*Cypripedium acaule*) growing in a patch of woods by the roadside. I noticed that many of the blossoms showed brown areas and were beginning to wilt. On opening these injured flowers I was surprised to find that most of them contained three or four of the beetles and that they were apparently responsible for the injury — C. R. CROSBY, Ithaca, New York.

Proposed Amendments: International Rules of Zoological Nomenclature.

Notice to the Zoological Profession that Certain Propositions for Changes in the International Rules of Zoological Nomenclature have been submitted to the International Commission for Consideration.

The undersigned has the honor to invite attention of the zoological profession to the fact that a considerable number of propositions for changes in the International Rules have been submitted to the Commission. Some of these involve major questions, others deal with minor points. The present notice deals chiefly with certain major questions.

Zoological societies, special and national committees on nomenclature, and individual zoologists are cordially invited to communicate to any member of the Commission their views on these propositions, not later than June 30, 1930, if feasible. The Commission will hold its next session probably in August or September, 1930.

1930A [number of proposition in Secretary's file].—Instructs the Commission to report to the Congress all propositions which obtain a *majority* [instead of a *unanimous* vote, as heretofore] and these controversial cases are then to be decided in open meeting by the general session of the triennial congresses. This proposal was presented with a list of about 550 names in 1913 and of about 650 names in 1927 of persons who supported it, but a referendum conducted in the United States showed a vote of 549 against it and only 4 for it.

1930B [substitute for *1930A*].—At least all those proposals for amendments of or additions to the International Rules of Zoological Nomenclature which have obtained—

first, a majority of 5/6ths of the total membership of the Commission of Nomenclature for the time being, *and*

subsequently, 5/6ths of the votes of those present at the meeting of the Commission,

shall be the recommendations of the Commission to the Congress.

1930C [substitute for *1930A, B, D, F*].—The stability of the Rules is a prime and fundamental principle.

1930D.—Provides that type designation by "Elimination" be raised from the status of a *recommendation* (Art. 30*k*) to the status of a *rule*. This proposal has three times (1907; 1913; 1927) failed of acceptance in Commission, and it is re-

submitted for reconsideration in 1930. In its support were about 550 signatures in 1913 and about 650 signatures in 1927, chiefly Europeans. The 1927 referendum conducted in the United States resulted in 4 signatures in favor, and 548 signatures against this proposition.

1930E [substitute for *1930D*].—That under Article 30, III of the Rules, the Recommendations *h, i, j,* and *k,* in this order, be raised from the status of *recommendations* to the status of *rules,* effective (but not retroactive) after December 31, 1930, or at a date later by not more than three years.

1930F.—Proposition to reject from nomenclature papers which are *binary* (recognizing genera and species) but *not binomial* (do not use generic and specific names as a binomial). This is a century-old controversial question which failed of acceptance by the Commission in 1901, 1913, and 1927.

1930G [substitute for *1930F*].—To accept the 12th edition (1766-67) of Linnaeus' *Systema naturae* as a starting point for the application of the Rules of Nomenclature, thus eliminating many of the papers printed in the transitional stage of 1758 to 1766.

1930H.—A purely tentative draft (for purpose of study) defining the term "Publication".

RULE effective January 1, 1931 (and in some parts retroactive).—From the standpoint of the Rules of Nomenclature, Zoological Publication shall consist (or consists) in the *distribution* of zoological documents containing *data intended as record* [i. e., not asking for information]. The distribution must be, at least in part, by sale, thus making the documents potentially and reasonably available to the entire zoological profession, and the documents must be manifolded by some method (such as printing) and with materials (permanent ink and fairly stable paper) which promise reasonable permanency.

Preliminary notices are to be considered publication, since it is customary to admit their names to action of the Law of Priority.

The following are not to be considered publication:

a. Anonymous documents of every kind including unsigned reviews and editorials;

b. Deposit of document in public library without simultaneous offering for sale to make it potentially and reasonably available to the entire zoological profession [not retroactive, because of the old university custom of exchange of theses];

c. Documents of any sort not bearing at least the year date;

d. Manuscript (including hard, carbon, and letter press copies);

e. Presentation of paper before meeting of any kind;

f. Printer's proof sheets (galley or page);

g. Separata (including preprints; reprints: etc.), unless these are definitely placed on sale as separate publications;

h. Specimen tags or museum labels, but these take date and published status when quoted in published documents;

i. Reports (no matter how detailed) in the nontechnical press (for instance, political or lay newspapers, lay journals, lay magazines, etc.).

RECOMMENDATIONS.—It is urgently recommended that all zoological documents of record printed in any of the less universally read languages (Chinese, Hungarian, Japanese, Polish, Russian, etc.) be provided with a summary in English, French, German, Italian, Latin, or Spanish.

The date borne by a publication is to be assumed to be correct unless and until proved to be incorrect.

In case of publications bearing more than one year date (example, "Proceedings for the years 1883 to 1885") without a definite year date of issue, the last year (example 1885) may be assumed to be the date of publication for all pages of the volume unless and until an earlier date of issue is proved.

In case of publications bearing only the year date, the actual date of publication for all pages may be assumed to be December 31, unless and until an earlier date of issue is proved.

In case of publications bearing year and month date, the actual date of all pages may be assumed to be the last day of that month, Greenwich time, unless and until an earlier date of issue is proved.

In case of serials, it is recommended that the actual date of publication of each part or number be stated in the next succeeding part or number.

All zoological documents should bear the name and address of the editor or publisher, or publishing organization, and it is well for publishers to report titles promptly to dealers in scientific publications, to zoological bibliographic agencies, and to journals which habitually publish reviews or abstracts.

19301.—It is recommended that superfamily names, based on generic names, be given the ending *oidea*. [As originally proposed by Gill (1872) when he proposed the superfamily as a group. Four endings are now used for superfamily names: *oidea, oidae, oideae,* and *ides*.]

It is recommended that new ordinal names, when based upon

generic names, be given the ending *ida* (or *idca?*) and new subordinal names *ina* (or *inca?*).

1930J.—The following amendments to Articles 4 and 5 have been submitted to the Commission. (See Science, 1928, vol. 68, August 3, pp. 102-104.)

(a) The type genus of a family or subfamily shall be the contained genus of which the stem of the name was first employed in combination with a termination in Latin plural form to designate a group higher than genus. If any termination was originally used other than provided for in Article 4 of the code, said termination shall be changed to bring it into conformation with that article. (Older authors rarely used the terminology today required.)

(b) The name of a family or subfamily shall date from the time it was first proposed as a group higher than genus, provided it was based on a contained generic name. (The older authors used many terms to indicate groups equivalent from a nomenclatorial standpoint to what we now call family and subfamily.)

(c) *Recommendation.* When erecting a subfamily or family, an author should choose the oldest valid contained genus as type, whenever feasible; but no family or subfamily name is to be changed because its type is not the oldest contained genus.

Article 5. When the name of the type genus of a family or subfamily is found to be a homonym, it must be changed to correspond to the change of the name of its type genus.

In addition to the foregoing specific propositions, the Commission has before it three general propositions which call for extensive changes in wording, arrangement, and details of the present Rules. These are:

1930K.—Report of the British National Committee on Entomological Nomenclature: See Proc. Ent. Soc. London, 1928, containing early edition which has now been somewhat emended.

1930L.—Numerous propositions by Dr. Franz Poche. See *Entomologischer Anzeiger,* Jahrgang VII, 1927, Nr. 1-15, about 75 pages.

1930M.—Schenk's proposal to reedit present Rules, with various modifications. Not published, but manuscript copy can be consulted at office of any of the Commissioners.

1930N.—Various proposals by Dr. Baron de Féjerváry (of Budapest). See Bul. Soc. Vaudoise Sci. nat., 1919, v. 52 (195), pp. 317-324.

The Commission sits, usually for one week, immediately

prior to the meeting of the Congress. According to procedure, no proposition is considered unless it is submitted to the Commission at least one year prior to the meeting of the Congress. A preliminary informal vote on propositions precedes the meeting of the Commission, and no proposition is subject to discussion unless it receives a majority vote in this preliminary consideration. No proposition is reported to the Congress unless it receives the unanimous vote of the entire Commission present at the meeting.

Hearings are granted to persons especially interested, *pro* or *con*, in any proposition.

C. W. STILES, *Secretary to Commission.*

Entomological Literature

COMPILED BY FRANK HAIMBACH AND LAURA S. MACKEY
UNDER THE SUPERVISION OF E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The numbers **within brackets** [ ] refer to the journals, as numbered in the list of Periodicals and Serials published in the January and June numbers (or which may be secured from the publisher of Entomological News for 10c), in which the paper appeared. The number of, or annual **volume,** and in some cases the part, heft, &c. the latter **within** ( ) follows; then the pagination follows the **colon** :

All continued papers, with few exceptions, are recorded only at their first installments.

*Papers containing new forms or names have an * preceding the author's name.

(S) Papers pertaining exclusively to neotropical species, and not so indicated in the title, have the symbol (S) at the end of the title of the paper.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

☞ *Note the change in the method of citing the bibliographical references, as explained above.*

Papers published in the Entomological News are not listed.

GENERAL.—Aaron, S. F.—Six-legged warriors. A view of some battlers of the world of insects. [31] 14: 281-284, ill. **Barnett, R. J.**—Entomology in Kansas. A historical note. [103] 2: 90-93. **Belfrage, G. W.**—Naturalists of the frontier by S. W. Geiser. [Southwest Review] 14: 381-398. **Blackmore, E. H.**—Obituary. [4] 61: 218. **Breakey, E. P.** —Notes on the natural enemies of the Iris borer, Macronoctua onusta. [7] 22: 459-464. **du Monceau, H. L. D.**—A pioneer economic entomologist. By P. Simmons. [12] 22: 820-821, ill. **Engelhardt, G. P.**—The Brooklyn and New

York Entomological Societies, past and present. [7] 22: 392-400. **Gifford, W. M.**—An appreciation. By E. P. Van Duzee. [55] 6: 46-47. **Hall, M. C.**—Arthropods as intermediate hosts of helminths. [Smiths. Misc. Coll.] 81, no. 15: 77 pp., ill. **Hayes, W. P.**—A preliminary list of insects of the Sorghum Field. [Trans. Kansas Acad. Sci.] 30: 235-240. **McAtee, W. L.**—The place of authority in taxonomy. [10] 31: 138. **Scheidter, F.**—Insektenlarven: Larvenformen und larvenleben. [Der Naturf., Berlin] 6: 241-247. **Scott, H.**—On some cases of maternal care displayed by cockroaches and their significance. [8] 65: 218-222. **Stewart, M. A.**—The teaching of entomology. [12] 22: 777-781. **Tucker, E. S.**—Studies of insects associated with the American mistletoe. [Trans. Kansas Acad. Sci.] 30: 143-170, ill.

ANATOMY, PHYSIOLOGY, ETC.—Campbell, F. L.—The detection and estimation of insect chitin; and the irrelation of "Chitinization" to hardness and pigmentation of the cuticula of the American cockroach, Periplaneta americana. [7] 22: 401-426, ill. **Grossman, E. F.**—Biology of the Mexican cotton boll weevil IV. Duration of fertility after copulation. [39] 13: 41-43. **Mergenthaler, W.**—Ueber die putzorgane der hautflügler. [Aus der Heimat, Stuttgart] 42: 289-292, ill. **Muttkowski, R. A.**—Insect nutrition and metabolism. [7] 22: 552-554. **Steinweden, J. B.**—Notes on the origin of the wax secretion of certain Coccinellid larvae. [55] 6: 26-32, ill.

ARACHNIDA AND MYRIOPODA.—*Petrunkevitch, A.—Descriptions of new or inadequately known American spiders. [7] 22: 511-525, ill.

THE SMALLER ORDERS OF INSECTS.—Allison, V. C.—Some dragon flies of southeastern Kansas. [Trans. Kansas Acad. Sci.] 30: 45-58, ill. **Clark, A. H.**—Peripatus from the island of Montserrat. [10] 31: 139. ***Jordan, K.**—On a small collection of Siphonaptera from the Adirondacks, with a list of the species known from the state of New York. [71] 168-177, ill. ***Moulton, D.**—Contribution to our knowledge of American Thysanoptera. [19] 24: 224-244, ill. **Park, O.**—Reticulitermes tibialis in the Chicago area. [10] 31: 121-126. **Táborsky', K.**—Études systematiques et morphologiques sur l'appareil buccal des Odonata. [74] 5: 143-180, ill. **Wagner, J.**—Ueber die nordamerikanische Ceratophylli welche auf Zieseln und Murmeltieren leben. [56] 8: 311-315.

ORTHOPTERA.—Uvarov, B. P.—Locusts and grasshoppers. A handbook for their study and control. 352 pp., ill. **Uvarov & Zolotarevsky.**—Phases of locusts and their interrelations. [22] 20: 261-265.

HEMIPTERA.—de la Torre-Bueno, J. R.—A few late spring bugs. [19] 24: 221. ***Gillette & Palmer.**—Five new Aphididae from Colorado. [7] 22: 468-476, ill. **Griswold, G. H.**—On the bionomics of a primary parasite and of two hyperparasites of the geranium aphid. [7] 22: 438-452, ill. **Johnston, H. G.**—A partial list of Miridae from Texas. [19] 24: 217-219. ***Knowlton, G. F.**—Aphid notes from Utah. [55] 6: 33-42, ill. **Knowlton, G. F.**—Notes on a few Homoptera from Utah. [39] 13: 45-51. **Lawson, P. B.**—A list of the Cicadellidae of Kansas. [Trans. Kansas Acad. Sci.] 30: 331-336. ***Moulton, D.**—New Mexican Thysanoptera. [55] 6: 11-20. ***Osborn, H.**—A new genus and three new species of South American Cicadellidae. [7] 22: 465-467. ***Van Duzee, E. P.**—A new Corimelaena. [55] 6: 10.

LEPIDOPTERA.—Bennett, N.—The dissection and preparation of the genitalia of lepidoptera. [9] 62: 220-223, cont. **Bratley, H. E.**—Notes on Lymire edwardsi, the rubber tree caterpillar. [39] 13: 44. ***Busck, A.**—A new aegeriid on cowpea from Brazil (Aegeriidae). [10] 31: 134-136, ill. **Cockerell, T. D. A.**—Paonias excaecatus in Colorado. [19] 24: 244. **Crevecoeur, F. F.**—Additions to the list of Kansas Lepidoptera. [Trans. Kansas Acad. Sci.] 30: 377-385. ***Gunder, J. D.**—The genus Euphydryas of Boreal America (Nymphalidae). [55] 6: 1-8, ill. ***Gunder, J. D.**—An addition to Cynthia carye (Nymphalidae). [55] 6: 9, ill. ***Hampson, G. F.**—Five new species of Phycitinae (Pyralidae). (S). [75] 4: 351-353. ***Holland, W. J.**—Notes upon some North American species and varieties of the genus Brenthis. [3] 19: 35-45, ill. **Holland, W. J.**—The Argynnids of the Nokomis-group. [3] 19: 15-34, ill. [In December, 1928, the above articles of Dr. Holland's were cited without the journal reference number, [3], which is "Ann. Carnegie Mus."] **Klots, A. B.**—Further notes on Eurema (Pieridae). [19] 24: 214-216. **Klots, A. B.**—The generic status of Catopsilia and Phoebis, with a discussion of the relationships of the species and the homologies of the male genitalia (Pieridae). [19] 24: 203-214, ill. **Kosminsky & Golowinskaja.**—Zur morphologie des geschlechtsapparats der Lepidopteren. [46] 15: 459-473, ill. **Latham, R.**—Isturgia truncataria in Long Island. [19] 24: 246. **Przegendza.**—Zur biologie von Morpho hercules. (S). [14] 43: 154-155. **Randolph, V.**—A list of the butterflies of Craw-

ford County, Kansas. [Trans. Kansas Acad. Sci.] 30: 59-61. A preliminary study of the life history and habits of Dione vanillae. [Trans. Kansas Acad. Sci.] 30: 351-362. ***Röber, J.**—Ueber einige exotische falter. [18] 23: 323-327, ill. **Salman, K. A.**—Notes on the immature stages and biology of a birch case-bearer. [7] 22: 480-488. **Seitz, A.**—Ueber das sammeln von Mikrolepidopteren. Pyralidae. [17] 46: 37-39, ill., cont. **Van Mellaerts, L.**—La curiosité chez les papillons? [Lambillionea] 29: 99-100.

DIPTERA.—Bigelow, N. K.—Some common Diptera and their habits. [19] 24: 245-246. ***Curran, C. H.**—New Syrphidae and Tachinidae. (S). [7] 22: 489-510. **Fall, H. C.**—Phyllophaga austricola—A correction. [19] 24: 216. **Frost, C. A.**—Winter homes for mosquitoes. [19] 24: 223. **Hall, D. G.**—An annotated list of the Sarcophaginae which have been collected in Kansas. [103] 2: 83-90. ***Malloch, J. R.**—Exotic Muscaridae. (S). [75] 4: 322-341.

COLEOPTERA.—*Blaisdell, F. E.—A revision of the beetles of the Tenebrionid tribe Usechini, with descriptions of a new genus and new species. [50] 75, Art. 19: 14 pp., ill. ***Blaisdell, F. E.**—Miscellaneous studies in the Coleoptera, III. [55] 6: 21-25, ill. **Blaisdell, F. E.**—Note on Notoxus. [55] 6: 42. **Brooks & Cotton.**—The chestnut curculios. [U. S. Dept. Agric.] Tech. Bull. 130: 24 pp., ill. ***Chamberlain, K. F.**—A new species of Gyrinus from northern New Hampshire. [19] 24: 247-249, ill. **Dawson, R. W.**—Biology of the tiger beetles with a key to the species of Cicindela found in Minnesota. [Univ. Minn. Agric. Exp. Sta.] Tech. Bull. 56: 3-8, ill. **Frost C. A.**—Cicindela tranquebarica horiconensis. [19] 24: 219. A synonym. [19] 24: 249. **Frost & Dietrich.**—Coleoptera taken from bait-traps. [7] 22: 427-437, ill. **Hayes, W. P.**—Kansas Rhynchophora in the collection of the Kansas State Agricultural College. [Trans. Kansas Acad. Sci.] 30: 205-212. **Horn, W.**—Notes and records on the tiger beetles of Minnesota. [Minn. Agric. Exp. Sta.] Tech. Bull. 56: 9-13. ***Horn, W.**—Sur deux espèces nouvelles d'Odontochila néotropiques et quelques autres espèces rapprochées. (S). [Rev. Chilena Hist. Nat] 33: 154-158, ill. ***Hustache, A.**—Un nouveau genre remarquable de Baridiinae (Curculionidae). (S). [75] 4: 349-351, ill. **Kleine, R.**—Ueber die biologie und die systematische stellung der Taphroderini. [2] 25: 149-150. **Maran, J.**—The study of the rudiments of the wings in the genera Pterostichus, Poecilus, Abax and Molops. (Carabidae.) [74] 5: 121-139, ill. **Notman, H.**—

Coleoptera from northern California. [19] 24: 222-223. **Pic, M.**—Addenda et corrigenda du Coleopterorum Catalogus. [33] 69: 205-208. ***Reichensperger, A.**—Neue ameisengäste und ein neuer termitengast (Pauss. Hist. Staph.). (S). [2] 25: 132-137.

HYMENOPTERA.—Andrews, E. A.—The mound-building ant, Formica exsectoides, associated with tree-hoppers. [7] 22: 369-391, ill. **Bequaert, J.**—Podalonia violaceipennis (Lepeletier). A dimorphic fossorial wasp. [19] 24: 220-221. ***Borgmeier, T.**—Zur kenntnis der brasilianischen ameisen. [EOS] 5: 195-214, ill. **Crevecoeur, F. F.**—Additions to the list of Kansas Hymenoptera. [Trans. Kansas Acad. Sci.] 30: 385-388. ***Flanders, S. E.**—A new codling moth parasite. (Calliephialtes sp.) [55] 6: 32. **Howard, L. O.**—Aphelinus mali and its travels. [7] 22: 341-368. **Kostoff & Kendall.**—Studies on the structure and development of certain cynipid galls. [92] 56: 402-458, ill. **Lubbock, J.**—Ants, bees and wasps. A record of observations on the habits of the social Hymenoptera. 377 pp., ill. ***Smith, M. R.**—Descriptions of five new North American ants, with biological notes. [7] 22: 543-551, ill. ***Timberlake, P. H.**—A new species of the Encyrtid genus Metaphycus from Washington. [55] 6: 43-45. **Van Duzee, E. P.**—A rare wasp from Oregon. (Odynerus margaretellus). [55] 6: 47.

A MANUAL OF EXTERNAL PARASITES, by HENRY ELLSWORTH EWING, 225 pages, 96 text figures, Charles C. Thomas, Springfield, Ill., 1929.

Here is a book for which a word of sincere praise is due to the publisher and printer. It is a most attractive little volume, beautifully bound, and beautifully printed. It would form a creditable addition even to a library the function of which is to please the esthetic sense rather than to fulfill the severely utilitarian needs of reference.

But with the contents the case is somewhat otherwise. Were the reviewer to attempt a single word summary—after the fashion of the "wise-cracking" journals—he might be tempted to light upon the word "feeble" as his choice. The book simply falls short of being what it should be. It is an attempt to fill a very obvious gap in our entomological literature. From the reviewer's point of view it rattles about somewhat in the gap, but still it performs its intended function with a certain measure of efficiency. To the entomologist who knows nothing of the ectoparasitic Arthropoda it will be extremely useful, for it brings within the compass of a single volume information that

otherwise is scattered so widely as to be almost unavailable to the general student. And as there are in all the world scarcely more than a dozen entomologists who are especially informed concerning the fields that the book covers, it is evident that there is a definite advance with its publication. Nevertheless, from the point of view of one of that dozen, it cannot be regarded as constituting an especially impressive contribution to the literature of the ectoparasites.

In the first place, the title is misleading. It is presented without qualifications or reservations as "A Manual of External Parasites." The selection of a title is almost always a difficult matter and it is perhaps to that difficulty that the discrepancy between promise and performance is to be charged. But the discrepancy is large. The ectoparasitic Arthropoda come from a surprisingly large number of widely separated groups. There are the Acarina of the Arachnida; the two families Cimicidae and Polyctenidae of the Hemiptera; the so-called sub-order Pupipara of the Diptera with its three families Hippoboscidae, Streblidae and Nycteribiidae, and the curious Braulidae of uncertain position; there are the truly parasitic beetles of the families Leptinidae and Platypsyllidae and a number of presumably parasitic Staphylinidae; there is *Hemimerus* of the Dermaptera; there are the three completely parasitic orders Mallophaga, Anoplura and Siphonaptera; there are even one or two putatively parasitic moths. But of this assemblage only the Acarina, Anoplura, Mallophaga, and Siphonaptera are treated in this volume, in spite of the inclusive title.

It is true that the groups dealt with include in numbers of species probably more than ninety-five percent of the ectoparasites, but the remaining groups are biologically just as important and the knowledge of them among entomologists is even more limited. They should at least have been accorded some measure of attention.

In its illustrations the volume clings all too closely to the standard from which the writers of our various text books of parasitology seem utterly unable to escape. True it does not go back quite as far for any of its illustrations as some other recent texts have done. It at least does not utilize Denny's picture of the crab louse which was *first* published in 1842! But the crudeness and inaccuracy of the figure purporting to illustrate *Menopon gallinae* (Fig. 60)—in which the palpi are represented as arising from the dorsal side of the head and the legs appear as unsegmented horns—represent but a slight improvement. It is equalled only by the morphologically amazing drawings of fleas (Figs. 93, 94) in which the abdominal

segments are represented as uninterrupted rings. Still, for these last two drawings the author has available the precedent set by one of the world's most eminent entomologists in one of the most recent comprehensive text books. Figure 59 is almost as bad, Figure 70 is little more than a blot, and numerous other figures, such as those from Lugger, are out of place in a modern book. On the other hand, Figures 86 and 89, representing details of fleas, are really excellent, while others are merely technically mediocre. Most important of all, however, is the fact that the number of figures which actually show much of what can really be considered as the morphology of the various groups is exceedingly few. There is practically no reason to suppose from the figures that any insect possesses structures on the ventral side of the body.

Something over one-third of the volume is devoted to the Acarina, and this portion of the volume is far more adequately developed and illustrated than is the remainder. This is but natural, since it covers the field in which the author is best qualified, his knowledge of the other groups being but a comparatively recent development. It may be assumed that the information contained is reliable and reasonably extensive. Certain omissions may be noted, however. Under the genus *Halarachne* (p. 18) it is said that but two North American species are known. Four have been recorded. Also the genus *Myialges*, regarded by Trouessart as constituting a subfamily of the Sarcoptidae, first described many years ago and redescribed more than a year ago by the present writer is not mentioned.

Under the Mallophaga the writer has done about as well as can be hoped for at the present time in compiling keys and arranging the groups. The order is at present in systematic confusion, due to the recognition of the inadequacy of the older classification but lacking any broad general studies that can serve as the basis for a better rearrangement. Ewing has seen fit to name several new genera, especially in the Trichodectidae. Until a careful general review of the Trichodectidae has been made it is doubtful that such a procedure really does anything more than complicate matters for some of these genera are of most dubious value. There is no evidence in the present work that such careful preliminary studies have been made.

Under the Anoplura, a group with which the reviewer is especially familiar, Ewing has essayed not only to name a number of new genera but to extend the general classification as well, again without convincing results. The general classification of the group waits upon the completion of compre-

hensive studies and until such have been accomplished nothing is to be gained by the naming of new subfamilies when even the present so-called families are of doubtful significance. There is no evidence in the present paper or in any of Ewing's few other short papers on the group that he has made such studies and there is no reason to suppose that his rearrangement is any special improvement over the present and evidently inadequate system. His inclusion of the genera *Phthirpediculus* and *Lemurphthirus* in the family Pediculidae is a case in point. He has evidently been influenced more by considerations of host relationship than by a knowledge of the structure of the insects.

The composition of genera is of course a matter of opinion and in our opinions the author and the reviewer diverge most sharply. Ewing indicates (preface) an expectation of criticism for publishing new genera in a volume such as this. The criticism is due rather for naming some of these genera in *any* publication. The genus *Enderleinellus*, which with its approximately twenty species all from Sciuridae, all of a common facies, all agreeing in essential characters and thus forming a compact, homogeneous and biologically significant group, appears to the reviewer to constitute a real genus—if there be such a thing at all—is split by Ewing into five genera that actually are based upon nothing more than minor departures from the general type.

For the genus *Ahaematopinus*, here named as new, there appears to be no valid reason and to place with its type species, *Neohaematopinus inornatus* Kellogg and Ferris, such species as *Polyplax insulsa* Ferris and *P. oxyrrhynchus* Cummings argues a lack of knowledge of the group.

The genus *Ctenura*, with the single species *Hoplopleura pectinata* Cummings, is an example of the forcible wrenching of a species from the midst of its friends and relatives to imprison it in solitary confinement because it departs slightly from the conventions. The case of *Hoplopleura trispinosa* Kellogg and Ferris, which is made the type of *Euhoplopleura*, is an even more marked example of the same thing.

Hoplopleura cryptica Ferris is made the type of the genus *Ctenoplura* but its very evident relatives, *H. neumanni* Fahrenholz, *H. biseriata* Ferris and *H. veprecula* Ferris are left behind. The earlier separation by Ewing of the genus *Pterophthirus* for the two species *Hoplopleura audax* Ferris and *H. alata* Ferris, and which was the picking up of a crumb dropped by the reviewer, has some justification but there is less for the naming of the genus *Ferrisella* with *H. ochotonae* Ferris as

type and *H. disgrega* Ferris, *H. malaysiana* Ferris and *H. emarginata* Ferris for its companions. Once more the reviewer is impelled tearfully to reject the honor implied by the incorporation of his cognomen in a generic name.

Why, in view of the naming of these genera, other species were left undisturbed is difficult to understand. At least a half dozen more genera of equal value could have been brought down by the "shot gun" methods employed and added to the bag. Why were *Nechaematopinus heliosciuri* Cummings, *Polyplax auricularis* Kellogg and Ferris, *P. praecisa* Neumann and *Hoplopleura bidentata* (Neumann) at least not seized upon as types of new genera? They are offered to the attention of the writer of the "Manual of External Parasites" together with the classical advice *"Non es bonum micas alterii legere."*

The section on the very important order Siphonaptera consists chiefly of a compilation of keys to the genera and a brief discussion of a few of the important genera. This should be especially useful as the generic keys to this order are at present much scattered. But three new genera are here named. G. F. FERRIS.

Doings of Societies.

The Rocky Mountain Conference of Entomologists.

The sixth annual Rocky Mountain Conference of Entomologists was held in Pingree Park, August 19 to 24, 1929, inclusive. A total of 64, including members of the families, registered at camp. Those directly interested in Entomology were present as follows: R. L. Shotwell, K. C. Sullivan, G. A. Dean, L. Johnson, F. B. Paddock, H. G. Butler, Donald A. Wilbur, Miriam A. Palmer, J. G. Sanders, Frank T. Cowan, C. P. Gillette, Sam C. McCampbell, Geo. M. List, Louis G. Davis, C. C. Hamilton, E. R. Bliss, Carl A. Bjurman, R. G. Richmond, Horace G. Smith, Leo J. Doering, L. M. Gates, L. B. Daniels, Geo. I. Reeves and C. R. Jones.

A total of ten sessions were held during the week for the presentation of papers. The following is a list of the subjects presented:

Orthoptera—Grasshopper Investigations, R. L. Shotwell; The Mormon Cricket Control Campaign in Colorado, F. T. Cowan.

Coleoptera—The Alfalfa Weevil in Colorado, J. H. Newton; The Clover Root Curculio on Alfalfa in Kansas, Donald A. Wilbur.

Hymenoptera—Breeding *Trichogramma minutum*, Geo. M. List.

Lepidoptera—The Bee Moth, F. B. Paddock; Codling Moth Traps, J. H. Newton; Codling Moth Work at the Wichita, Kansas, Station, H. G. Butler.

Homoptera—The Spruce Gall Aphid, C. P. Gillette; Aphids on Conifers of Colorado, Miss M. A. Palmer.

Diptera—The Mediterranean Fruit Fly, G. A. Dean.

Apiculture—Some Ideas on the Control of the American Foul Brood, R. G. Richmond.

Insecticides—Fumigating Gases, George A. Dean; Some Relations between Leaf and Fruit Growth of Two Varieties of Apples and the Quantity of Lead Arsenate Maintained, C. C. Hamilton; Oils, J. G. Sanders.

General—The Effect of Insects upon Civilization, G. A. Dean; Plant Inspection in Nebraska, L. M. Gates; Aquatic Insects of the Ozarks, K. C. Sullivan; Insect Egg Penetration, L. B. Daniels.

Symposium—Teaching Entomology: General Discussion and Summary, C. P. Gillette; General Courses, K. C. Sullivan; Graduate Teaching, D. A. Wilbur; Laboratory Teaching, C. R. Jones; The View Point of a Commercial Entomologist, J. G. Sanders; The View Point of a Producer, E. R. Bliss; The View Point of a Field Entomologist, J. H. Newton.

The symposium on the teaching of entomology led to the following recommendations to the various institutions represented and others interested:

1. That every student in agriculture be given a course in entomology and that this be given not later than the sophomore year.
2. That a course in entomology be required for all those taking up county extension agent work and vocational agriculture teaching.
3. That where an entomology department exists in an institution it be given charge of all entomological work of the institution.
4. That more attention be given to entomology in boys' and girls' club work.
5. That each candidate for a master's degree in entomology be required to have at least one-half year in insect morphology and one-half year in insect taxonomy.

The old officers consisting of C. P. Gillette, Chairman, J. W. McCulloch, Vice-chairman, Geo. M. List, Secretary and C. R. Jones, Treasurer, were retained in office for another year.
—GEORGE M. LIST, *Secretary.*

OBITUARY.

THOMAS UTTING SPALDING 1866-1929[1].

Thomas Utting Spalding, noted entomological collector, passed away in a Salt Lake City hospital July 9, 1929, after an illness of four days due to paralysis. He was born in Woodbridge, Suffolk, England, September 21, 1866, son of Frederick Spalding, an educated man and student of natural history. Tom Spalding, as he chose to be called, was early led by his father to take an interest in collecting insects and birds. His early education was thorough, as he was taught at home by his nurse and in private schools.

At the age of nineteen he left England in quest of adventure. He came to America and then to the west to participate in the search for gold. While in Utah he met Miss Minnie Swensen of Salt Lake City and they were married in 1892. To this couple were born five sons and one daughter, all of whom survive him.

About 1900, his collecting of Utah insects began in earnest. He had discovered that students of the Lepidoptera in the east were willing to pay for western specimens, and that there was a market for all the specimens, of many groups, he could collect. He was at this time employed by one of the mining companies at Stockston, working on the night shift at the entrance to the mines. This gave him an opportunity to capture many of the night-fliers. At this period of his life, his entomological friends were John Sugden and G. W. Browning, who have long been interested in collecting Utah insects.

In 1905, he moved to Provo and established his "collecting cabin" at Vineyard, on the sand dunes between Provo Bench and Utah Lake, about five miles northwest of Provo. From here, as his permanent quarters, he made collecting trips to various parts of the state, such as Provo Canyon, Callao and Deep Creek Mts. (Ibapah Mts.), Southern Utah, Parawan, Zion Park, and St. George, and Las Vegas, Nevada. In 1919,

[1] Contribution No. 20 from the Department of Zoology and Entomology, Brigham Young University, Provo, Utah.

he accompanied Mr. Warren Knaus on his collecting trip through the southwestern part of Utah. His last five years were spent in Dividend where he was employed at the mines.

The years 1917 and 1918 were his most productive from the standpoint of sales. His books show that in 1918 his receipts were $1150 from the sale of Lepidoptera alone. Specimens were purchased by such men as: Dr. Wm. Barnes, August Busk, Wm. Reiff, S. E. Cassino, J. A. Comstock, Wm. Beutenmuller, F. H. Benjamin, W. J. Coxey, C. A. Hill and others. In 1919, Mr. Spalding began to sell Coleoptera to Col. T. L. Casey. In all he sold him about 820 specimens from which lot the Colonel named dozens and dozens of new species. Mr. Spalding told me that he soon found Col. Casey to be a good customer as he paid well for all his "variable and freakish specimens". Mr. Spalding left a small collection of moths and beetles which are being cared for by members of his family.

Mr. Spalding could not be prevailed upon to publish upon his findings, this he left for others to do. Eighteen species were named in his honor. They are as follows:

Lepidoptera:

Philotes spaldingi B. & McD.
Grotella spaldingi B. & McD.
Lathosea spaldingi Barnes
Trachea spaldingi Sm.
Hyppa spaldingi Sm.
Xanthorhoe spaldingaria Grossb.
Eupithecia spaldingi Tayl.
Scoparia spaldingalis B. & McD.
Tetralopha spaldingella B. & B.
Eurythmia spaldingella Dyar.
Eucosma spaldingana Kearf.

Coleoptera:

Cicindela spaldingi Csy.
Bradytus spaldingi Csy.
Harpalus spaldingi Csy.
Coelocnemis spaldingi Csy.
Conipinus spaldingi Csy.
Prionus spaldingi Csy.

Diptera: *Tipula spaldingi* Dietz.

Tom Spalding will be remembered in many parts of the world as a great collector of Utah insects and in his passing Utah lost her most noted student of the Lepidoptera.

VASCO M. TANNER.

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List of the Titles of Periodicals and Serials Referred to by Numbers in Entomological Literature in Entomological News.

1. Transactions of The American Entomological Society. Philadelphia.
2. Entomologische Blätter, red. v. H. Eckstein etc. Berlin.
3. Annals of the Carnegie Museum. Pittsburgh, Pa.
4. Canadian Entomologist. London, Canada.
5. Pysche, A Journal of Entomology. Boston, Mass.
6. Journal of the New York Entomological Society. New York.
7. Annals of the Entomological Society of America. Columbus, Ohio.
8. Entomologists' Monthly Magazine. London.
9. The Entomologist. London.
10. Proceedings of the Ent. Soc. of Washington. Washington, D. C.
11. Deutsche entomologische Zeitschrift. Berlin.
12. Journal of Economic Entomology. Concord, N. H.
13. Journal of Entomology and Zoology. Claremont, Cal.
14. Entomologische Zeitschrift. Frankfurt a. M., Germany.
15. Natural History, American Museum of Natural History. New York.
16. American Journal of Science. New Haven, Conn.
17. Entomologische Rundschau. Stuttgart, Germany.
18. Internationale entomologische Zeitschrift. Guben, Germany.
19. Bulletin of the Brooklyn Entomological Society. Brooklyn, N. Y.
20. Societas entomologica. Stuttgart, Germany.
21. The Entomologists' Record and Journal of Variation. London.
22. Bulletin of Entomological Research. London.
23. Bollettino del Laboratorio di Zoologia generale e agraria della R. Scuola superiore d'Agricultura in Portici. Italy.
24. Annales de la société entomologique de France. Paris.
25. Bulletin de la société entomologique de France. Paris.
26. Entomologischer Anzeiger, hersg. Adolf Hoffmann. Wien, Austria.
27. Bolletino della Società Entomologica. Genova, Italy.
28. Ent. Tidskrift utgifen af Ent. Föreningen i Stockholm. Sweden.
29. Annual Report of the Ent. Society of Ontario. Toronto, Canada.
30. The Maine Naturalist. Thornaston, Maine.
31. Nature. London.
32. Boletim do Museu Nacional do Rio de Janiero. Brazil.
33. Bull. et Annales de la Société entomologique de Belgique. Bruxelles.
34. Zoologischer Anzeiger, hrsg. v. E. Korschelt. Leipzig.
35. The Annals of Applied Biology. Cambridge, England.
36. Transactions of the Entomological Society of London. England.
37. Proceedings of the Hawaiian Entomological Society. Honolulu.
38. Bull. of the Southern California Academy of Sciences. Los Angeles.
39. The Florida Entomologist. Gainesville, Fla.
40. American Museum Novitates. New York.
41. Mitteilungen der schweiz. ent. Gesellschaft. Schaffhausen, Switzerland.
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45. Zeitschrift für wissenschaftliche Insektenbiologie. Berlin.
46. Zeitschrift für Morphologie und Ökologie der Tiere. Berlin.
47. Journal of Agricultural Research. Washington, D. C.
48. Wiener entomologische Zeitung. Wien, Austria.
49. Entomologische Mitteilungen. Berlin.
50. Proceedings of the U. S. National Museum. Washington, D. C.
51. Notulae entomologicae, ed. Soc. ent. helsingfors. Helsingfors, Finland.
52. Archiv für Naturgeschichte, hrsg. v. E. Strand. Berlin.

53. Quarterly Journal of Microscopical Science. London.
54. Annales de Parasitologie Humaine et Compareé. Paris.
55. Pan-Pacific Entomologist. San Francisco, Cal.
56. "Konowia". Zeit. für systematische Insektenkunde. Wien, Austria.
57. La Feuille des Naturalistes. Paris.
58. Entomologische Berichten. Nederlandsche ent. Ver. Amsterdam.
59. Encyclopédie entomologique, ed. P. Lechevalier. Paris.
60. Stettiner entomologische Zeitung. Stettin, Germany.
61. Proceedings of the California Academy of Sciences. San Francisco.
62. Bulletin of the American Museum of Natural History. New York.
63. Deutsche entomologische Zeitschrift "Iris". Berlin.
64. Zeitschrift des österr. entomologen-Vereines. Wien.
65. Zeitschrift für angewandte Entomologie, hrsg. K. Escherich. Berlin.
66. Report of the Proceedings of the Entomological Meeting. Pusa, India.
67. University of California Publications, Entomology. Berkeley, Cal.
68. Science. New York.
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70. Entomologica Americana, Brooklyn Entomological Society. Brooklyn.
71. Novitates Zoologicae. Tring, England.
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74. Sbornik entomolog. národniho musea v Praze. Prague, Czechoslavokia.
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79. Koleopterologische Rundschau. Wien.
80. Lepidopterologische Rundschau, hrsg. Adolf Hoffmann. Wien.
81. Folia myrmecol. et termitol. hrsg. Anton Krausse. Bernau bei Berlin.
82. Bulletin, Division of the Natural History Survey. Urbana, Illinois.
83. Arkiv för zoologie, K. Svenska Vetenskapsakademien i. Stockholm.
84. Ecology. Brooklyn.
85. Genetics. Princeton, New Jersey.
86. Zoologica, New York Zoological Society. New York.
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88. Die Naturwissenschaften, hrsg. A. Berliner. Berlin.
89. Zoologische Jahrbücher, hrsg. v. Spengel. Jena, Germany.
90. The American Naturalist. Garrison-on-Hudson, New York.
91. Journal of the Washington Academy of Sciences. Washington, D. C.
92. Biological Bulletin. Wood's Hole, Massachusetts.
93. Proceedings of the Zoological Society of London. England.
94. Zeitschrift für wissenschaftliche Zoologie. Leipzig.
95. Proceedings of the Biological Soc. of Washington, Washington, D. C.
96. La Cellule. Lierre, Belgium.
97. Biologisches Zentralblatt. Leipzig.
98. Le Naturaliste Canadien. Cap Rouge, Chicoutimi, Quebec.
99. Mélanges exotico-entomologiques, Par Maurice Pic. Moulins, France.